

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

DINSRDC/CMLD-83/19

40-4135 950

ECONOMIC ANALYSIS MODEL PROGRAM USER'S MANUAL (BURROUGHS VERSION)

DAVID W. TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CENTER



Bethesda, Maryland 20084

PROGRAM USER'S MANUAL
(BURROUGHS VERSION)

by

Susan Becker



APPROVED FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED

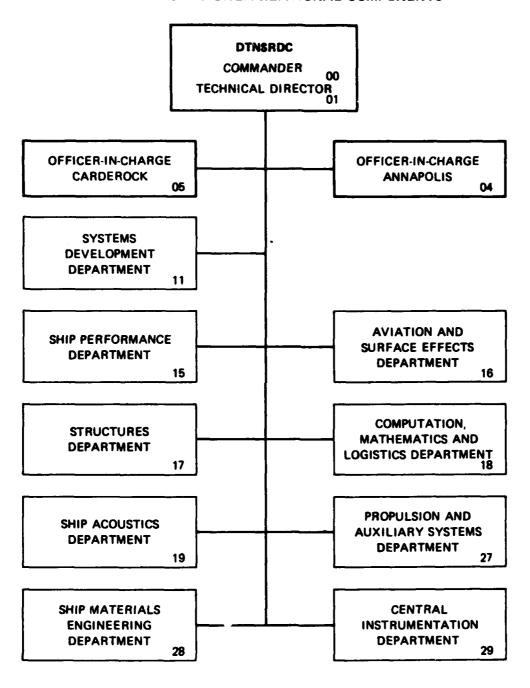
COMPUTATION, MATHEMATICS, AND LOGISTICS DEPARTMENT DEPARTMENTAL REPORT

June 1983

DTNSRDC/CMLD-83/19

83 12 16 130

# MAJOR DTNSRDC ORGANIZATIONAL COMPONENTS



UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

1. REPORT NUMBER		BEFORE COMPLETING FORM
	2. GOVT ACCESSION NO.	1
DTNSRDC/CMLD-83/19	111-A135	1750
4. TITLE (and Subtitle)		5. TYPE OF REPORT & PERIOD COVERED
ECONOMIC ANALYSIS MODEL		Final
PROGRAM USER'S MANUAL		
(BURROUGHS VERSION)		6. PERFORMING ORG. REPORT NUMBER
AUTHOR(e)		8. CONTRACT OR GRANT NUMBER(#)
Susan Becker		
PERFORMING ORGANIZATION NAME AND ADDRESS	·	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
David Taylor Naval Ship Research	and	f .
Development Center		NIF 1828-023
Bethesda, MD 20084		1626-023
1. CONTROLLING OFFICE NAME AND ADDRESS	<del></del>	12. REPORT DATE
Navy Publications and Printing S		June 1983
Bldg. 157-3, Washington Navy Yar	:d	13. NUMBER OF PAGES
Washington, DC 20734		54
4. MONITORING AGENCY NAME & ADDRESS(II dilleren	t from Controlling Office)	15. SECURITY CLASS. (of this report)
		UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
7. DISTRIBUTION STATEMENT (of the abetract entered	in Black 20, II different fra	en Report)
7. DISTRIBUTION STATEMENT (of the ebetrect entered	in Block 20, Il different fro	en Report)
9. SUPPLEMENTARY NOTES  O. KEY WORDS (Continue on reverse side if necessary an		
SUPPLEMENTARY NOTES      KEY WORDS (Continue on reverse side if necessary an Economic Analysis Break E	d identify by black number	
D. KEY WORDS (Continue on reverse side if necessary en Economic Analysis Break E DISSPLA Net Pre	nd identify by block number; Even Point sent Value	Calcomp Plots
D. KEY WORDS (Continue on reverse side if necessary on Economic Analysis Break E DISSPLA Net Pre FORTRAN Savings	d identify by block number; ven Point	Calcomp Plots

DD 1 JAN 73 1473

EDITION OF 1 NOV 65 IS OBSOLETE S/N 0102-LF-014-6601

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

W

Block 20 (Cont'd) Included, are references to the documentation of the original UNIVAC version of the program. Although the program was originally designed for equipment pro-	(m')	UNCLASSIFIED SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)
Included, are references to the documentation of the original UNIVAC version of the program. Although the program was originally designed for equipment procurement, it was successfully used for an economic analysis of an automated deprocessing system.		
	Z	Included, are references to the documentation of the original UNIVAC version of the program. Although the program was originally designed for equipment procurement, it was successfully used for an economic analysis of an automated data
	ļ	processing system.
	:	

UNCLASSIFIED

# TABLE OF CONTENTS

		Page
ABSTR.	ACT	1
1.0	INTRODUCTION	1
2.0	PROGRAM DESCRIPTION	1
3.0	BASIC ECONOMIC ANALYSIS CONCEPTS	4
3.1	Definition of Economic Analysis	3 3
3.2	The Economic Analysis Process	3
3.3	Starting the Economic Analysis Process	4
4.0	RUNNING THE PROGRAM	5
4.1	Using the Tektronix Terminal	
4.1.1	Character Sizes	5 5
4.2	Output to the Central Site	6
4.3	Output to the Terminal	7
4.4	Files	-
7.7	11160	7
5.0	REGULAR ANALYSIS	7
5.1	SIR Warning	9
5.2	EUAC Warning	10
5.3	Evaluation of Output	10
6.0	CONCLUSION	10
ACKNO	WLEDGMENTS	11
APPENI	DIX A - Sample Run - Regular Analysis	12
APPEN:	DIX B - Sample Run - Sensitivity Analysis	31
		-



Accession For	
NTIS CRA&I	2
DTIC TAB Unonneuroed	
Justilier tion.	
87	
Distribution/	
Avail. Blity	Codes
Maria end	-
Dist Decial	•
11.1	
M	

#### ABSTRACT

An automated Economic Analysis Model computer program designed to aid equipment procurement decisions is described in this report. Net present value, equivalent uniform annual cost, break even points, and savings to investment ratio output are presented in graphical form. Sensitivity analyses presented include lease vs. procurement, varying recurring costs, and varying differential inflation rates. The program was originally developed in China Lake, California on a UNIVAC computer, but was converted by DTNSRDC to run on its Burroughs B7700 computer. Only the converted version is described in this report. Included, are references to the documentation of the original UNIVAC version of the program. Although the program was originally designed for equipment procurement, it was successfully used for an economic analysis of an automated data processing system.

# 1.0 INTRODUCTION

The Economic Analysis Model computer program, developed by the Naval Weapons Center (NWC) in China Lake, California on a UNIVAC computer, performs calculations (based on user specified costs) needed in the economic analysis process. The model was developed to address economic analyses related to equipment procurement. The output is mainly graphical and consists of net present value, equivalent uniform annual cost, break even analysis, and savings to investment ratio. A number of sensitivity analyses can be performed, including lease vs. procurement, varying recurring costs, and varying differential inflation rates. The program has been modified so that it can be run on the Burroughs computer at the David Taylor Naval Ship Research and Development Center (DTNSRDC). This report describes how to use the modified program.

#### 2.0 PROGRAM DESCRIPTION

The Economic Analysis Program performs an economic analysis on data entered by the user. The program is at the working level and should not be used as the sole authority for action. The biggest advantage of the program is that it computes the results in a faster, and more efficient way than if the analysis was done by hand. This allows the user to enter several different approaches to the analysis without having to re-compute the costs each

time. The program will perform a regular analysis, perform a sensitivity analysis (rine different types), output plots of the results of the analysis, and output charts that show the computations of the net present values (NPVs), the equivalent uniform annual costs (EUACs), the savings to investment ratios (SIRs), and the break-even points.

In order to run the program the user must enter all the costs for each alternative (proposed project). No more than five alternatives are allowed for each analysis. The costs are entered in terms of non-recurring costs, recurring costs, and a terminal value. The recurring costs can be generated from curves built into the program. These curves are described in the NWC User's Guide for this program. The program also allows the user to enter a differential inflation rate.

After all the costs have been entered, the program will generate, for each alternative, a chart showing the input costs, the discounted costs, the net present value of these costs, the equivalent uniform annual cost, and, except for the status quo alternative, the savings-to-investment ratio. When all the charts have been completed, the program generates plots if requested. The first plot is a graph of the cumulative total cost of the status quo alternative, plotted against the cumulative total cost of the second alternative. Each alternative thereafter is plotted against the status quo. Next, the savings-to-investment ratio is plotted for every alternative except the status quo. The user has the option of saving this analysis in a file and should do so to avoid having to re-enter the costs if a sensitivity analysis is done. This completes the regular analysis.

The user may then want to perform a sensitivity analysis. This program supports nine types of sensitivity analysis:

- 1. Lease versus Procurement
- 2. Status Quo versus Procurement
- 3. Varying Start and/or Total Number of Years
- 4. Varying Recurring Costs
- 5. Varying Investment Costs

- 6. Varying Differential Inflation Rates
- 7. Varying Recurring Costs and Total Number of Years
- 8. Varying Investments and Recurring Costs
- 9. Varying Investments and Total Number of Years

These analyses are fairly easy to use and are further described in the NWC User's Guide, pages 10-15. Each sensitivity analysis provides its own set of charts and graphs.

#### 3.0 BASIC ECONOMIC ANALYSIS CONCEPTS

Running the program requires some basic knowledge of the economic analysis process. This section briefly explains some basic concepts used in the model program.

#### 3.1 DEFINITION OF ECONOMIC ANALYSIS

An Economic Analysis is defined in "Economic Analysis Procedures for ADP," Pub 15 7000, page E-3, as:

"A systematic approach to quantifying, portraying, and evaluating the relative worth of proposed projects. Basically, it consists of six steps: stating the objective; listing assumptions; defining the alternatives; determining costs and benefits; comparing and ranking alternatives; and performing a sensitivity analysis."

An alternative is a proposed project. The status quo alternative is the system currently in use. The various alternatives are compared by their costs and by their non-monetary benefits. The Economic Analysis Model Program performs only cost analyses; it does not compare the non-monetary benefits of the alternatives. Any non-monetary benefits should be stated in the formal report of the analysis.

## 3.2 THE ECONOMIC ANALYSIS PROCESS

Every economic analysis involves several steps:

- 1. State the goal or objective of the analysis. This will help when considering what alternatives to use.
- 2. Decide what assumptions will be used. These assumptions are statements or descriptions of the present or future environment on which the economic analysis is based. They must be valid and as accurate as possible since the validity of the results of an economic analysis are only as valid as the input data.
- 3. Find all reasonable alternatives that will meet the goals stated in the first step.

- 4. Gather the costs and benefits associated with each alternative. These costs are either non-recurring (one-time), or recurring (annual).
  Also, decide whether there is a terminal value (a salvage or resale value).
- 5. Compare these costs and benefits. The several methods for comparison will be discussed in Section 5.3.
- 6. Perform a sensitivity analysis to show the outcome of major uncertainties. A sensitivity analysis is used to examine the effects of as many major uncertainties as possible, for example, "What if the system life is ten years instead of eight?"

Keep in mind that an economic analysis is only <u>one</u> factor in the decision making process and should not be the sole basis for a decision.

# 3.3 STARTING THE ECONOMIC ANALYSIS PROCESS

Determine the alternatives to be considered.

Determine the economic life for each alternative.

Determine the costs for each alternative.

These costs are broken down in the following manner:

- Decide which costs are non-recurring (one-time), and which are recurring (annual). Also determine the terminal value (the resale or salvage value, if any).
- 2. Further break down the non-recurring costs into
  - a) Building investments
  - b) Equipment investments
- 3. Further break down the recurring costs into
  - a) Maintenance costs
  - b) Operations costs
  - c) Direct costs
- 4. Decide whether these costs will inflate at a normal rate or require an inflation differential. If the latter, determine what that differential should be (e.g., 1% more than the normal rate, 1% less than the normal rate etc.).

These data can now be input to the program.

#### 4.0 RUNNING THE PROGRAM

Since the program is interactive, all the needed input figures should be on hand before starting the program (see Section 5.0 of this report and Appendix A). To run the program sign on to the Burroughs CANDE from either a Tektronix terminal or a regular terminal (one without graphics capabilities). If the terminal is not capable of displaying graphics, the user can either route the plots to the central site, or request that no plots be given. To run the program type:

RUN (CASB)ECON; MAXPROCTIME=300;

and return. The program will start directly afterwards. The "MAXPROCTIME=300" option is not required for smaller analyses (those whose economic lives are under 15 years), but it is recommended that this option always be used.

#### 4.1 USING THE TEKTRONIX TERMINAL

The Tektronix terminals are located in the 6400 room in Building 91 at DTNSRDC. Turn on the terminal and, before connecting with the Burroughs, initialize it as follows:

- 1 Flip the "line/local" switch to "local."
- 2 Press the "RESET PAGE" button.
- 3 Press the "SHIFT" button and hold it down while pressing the "CTRL" button, hold both buttons down and press "P". Then release all three buttons simultaneously.
- 4 Flip the "line/local" switch back to "line."
- 5 Dial the Burroughs number and sign on.
- 6 After signing on press the "ESC" button followed by the ";" (semicolon). The cursor should appear very small, if it is not already.

If this procedure does not work, repeat the process, but in step #2:

- Press the "SHIFT" button and hold it down while pressing the "RESET PAGE" button. Release both buttons simultaneously.

The rest of the steps are done as before.

#### 4.1.1 Character Sizes

The Burroughs system does not have the capability to set the character sizes (on the Tektronix terminal) from within a computer program. The

character size can be set from the terminal by pressing the "ESC" key followed by either "8", "9", ":", or ";" to obtain the desired size. The user should use "ESC;" for this program so that the "Reset Page/Copy" prompt will appear at the proper place on the CRT screen.

### 4.2 OUTPUT TO THE CENTRAL SITE

When the user specifies the central site as the output location, the program stores all the plots in a plotfile which is kept in the user's files. Only one plotfile is allowed in the user's files, so every time this program is run with the central site option, any previous plotfile is removed (DESTROYED!!) and replaced with the current plotfile. The user should obt a hard copies of all important plotfiles before running the program again. look at the plotfile before putting it on a Calcomp plotter, enter the following command from a Tektronix terminal:

RUN \*DISPOST/TEK300; MAXPROCTIME=300;

The "MAXPROCTIME=300" command is optional, but it is needed for plotfiles which contain a large number of plots, and therefore it is always advisable to use it. After this command has been entered, the terminal will respond with:

ENTER SPECIAL REQUESTS

?

Press the space bar a few times and return. The screen will go blank and the first plot will appear.

When the first plot is complete, the terminal will beep. If a hard copy is desired, press the copy button and return. The next plot will then appear.

When all the plots have been plotted, the screen will respond with:

If Calcomp plots are desired, obtain a 9-track tape and put it in a slot at the Burroughs site. Then enter the following commands replacing all words inside "< >"'s with the correct information (These commands are executed interactively from CANDE):

START #JOB/MOUNT ("<TAPENAME>","RING")

RUN \*DISPOST/CAL1051; FILE FILE10(TITLE=PLOTFILE, SERIALNO=("<TAPENAME>"));

After a small delay (the operator is mounting the tape), the response will be:

ENTER SPECIAL REQUESTS

?

Press the return button. After a series of messages the terminal will display "n plots processed" (n = number of plots). At this point the plots are on the tape. Retrieve the tape and submit it, along with a Calcomp request (see Figure 1), to the operator at the CDC site.

#### 4.3 OUTPUT TO THE TERMINAL

Graphs can be plotted directly to the terminal only when the program is run from a Tektronix terminal. The graphs will be plotted after the charts are completed. When the plotting is finished, the terminal will beep. To obtain a copy of the plot, press the copy button. Then press the return button and the next plot will appear or, if the plotting is finished, the program will continue with further instructions.

#### 4.4 FILES

The user can save the input data in a file so that the data need not be re-entered if a secondary analysis is done. In order to read data from a file, the file must have been created by this program. The user must supply a name for each file. The name must be no longer than twelve characters (letters, numbers, or a slash) and must end with a period. The period, which is not part of the file name, merely indicates the end of the file name. The program will check to make sure the file name is legal. Requesting a file name that is not one of the files created by this program, will about the program. If the user writes to a file that already exists, the program will write over the file, destroying the original copy. The user is advised to save the data in a file so that it need not be re-entered if the same analysis is used again, especially if sensitivity analyses are to be done.

#### 5.0 REGULAR ANALYSIS

Before running the Economic Analysis Program the user should have all input costs on hand (unless they are in a file). The program allows up to five alternatives. The first alternative is always the status quo. No investment costs (non-recurring) can be entered for the status quo alternative.

Five types of costs may be entered and should be known before running the program:

Building Investments - Nonrecurring, not allowed for status quo

SETICAL USE EXT (60000)	DATE RUN !/!/s >	TOTAL TIME	TOTAL FIC /FRMS	OPERATOR/ COMMENTS	
SECRET CONFIDENTIAL PRIVATE OFFICAL USE SER NAME	LABELLED YES (NO)		COM PROCEDURE NAME		NO OF FILES NO OF FICHE
NFIDENTIAL	TRACKS	НОО	COM PROCE	FORM FLASH STD NONE	NO OF FILE
Si C	TAPE 1D DENSITY (4486 NAME) 200 556 800(1600)		ORIGIN X X Y Q	NO BLOCKS/FILES	BST TIME
ORDER # COOC - CO	TAPE ID	CALCOMP	PAPER #	STOP BLOCK	2 3 Fentre
CMLD CALCOM DATE JOB ("/"/83) (O	COCYSIEM COC		SID SETUP (YES) NO	START BLOCK	PEN (COLUR Black

SPECIAL INSTRUCTIONS

Figure 1 - Calcomp requests

Equipment Investments - Nonrecurring, not allowed for status quo

Maintenance Costs - Recurring
Operations Costs - Recurring
Direct Costs - Recurring

The recurring costs (Maintenance, Operations, and Direct) may be entered in one of two ways: key each cost in individually, or select the curve (see the NWC user's manual, pages 6-8) that best fits the direction of the costs and use that curve to input the costs. This procedure is explained in detail in the NWC User's Manual.

The user is also required to input a terminal value, also known as a resale value or a restoration value. If no such value exists, enter 0.0. Don't forget the decimal point. For a resale value enter that number (it should be positive). For a restoration value, enter the value with a negative sign preceding it. The program subtracts the terminal value from the total, so a restoration value it gets added to the total costs, because of its negative sign. After all the costs have been entered, the program will display the results (NPV, EUAC, and SIR) in a chart. When the chart is complete, the terminal will display:

\*\*\*END OF PAGE. IF YOU WANT A COPY PRESS THE COPY BUTTON\*\*\*\*
\*\*\*HIT THE RESET BUTTON\*\*\*, \*\*\*AND RETURN.

At this point the user should obtain a hard copy of the results by pressing the "COPY" button (if the output is routed to the terminal and a hard copy is not obtained, the program must be re-run to obtain a hard copy). Then press the "RESET PAGE" button. When the screen is clear, press the "RETURN" button. The heading will appear, and the program will continue.

### 5.1 SIR WARNING

If the the total investment cost equals zero, following message will appear:

\*\*\*ERROR\*\*\* THE SIR is in ERROR because Investment=0.

ALL SIR FIGURES AND GRAPHS WILL BE INCORRECT!!

The economic analysis will continue, but the SIR figure will be set to zero, and the "TOTAL INVESTMENT VS TOTAL SAVINGS" graph will be incorrect. These graphs and figures cannot be used in the analysis, although the other figures and graphs can.

### 5.2 EUAC WARNING

If the computed discount rates are zero, the program will give the following warning message:

\*\*\*WARNING\*\*\* THE EUAC IS IN ERROR

ALL EUAC FIGURES AND GRAPHS WILL BE INCORRECT!!

This situation rarely occurs and is usually due to a typing error in the start years or total years. Check the input figures for mistakes and re-enter the data if necessary. As with the SIR warning, no EUAC figures or graphs should be used in comparing the alternatives.

#### 5.3 EVALUATION OF OUTPUT

When the final charts and graphs have been obtained the user must know which methods for comparing alternatives are applicable to the specific analysis. The model program outputs results for four different methods.

Net Present Value Analysis (NPV) - This type of analysis, which gives the costs in terms of their present values, is used only when the economic lives of all the alternatives are equal. If the lives are not equal, the program will still compute a Present Value, but it cannot be used as a factor in comparing alternatives.

Equivalent Uniform Annual Cost (EUAC) - This type of analysis is used when the economic lives of the alternatives are <u>not</u> equal. It gives the costs in terms of average annual expenditures. This method can be used for any analysis regardless of the length of the economic lives of the alternatives.

Savings to Investment Ratio (SIR) - This method measures the financial benefit obtained from an alternative as compared to the status quo. A SIR greater than 1.0 is considered economically sound.

Break Even Analysis (BE) - This type of analysis is used to study the relationship among alternative cost patterns. It gives the Break-Even point, i.e., the point at which the costs of all the alternatives are equal.

#### 6.0 CONCLUSION

Although this program was originally designed for analyses of equipment procurement it was successfully used for economic analysis of an automated data processing system.

# ACKNOWLEDGEMENTS

The author would like to thank Stan Wilner of User Services for his help in debugging the modified program, and Jim O'Donnell for his help in understanding the economic analysis process.

APPENDIX A
SAMPLE RUN - REGULAR ANALYSIS

HUN ECON; MAKPROCTINE-300,

SECTO BYDE SECTOR

ESS ENS OF PAGE IF YOU WANT A COPY PRESS THE COPY BUTTOM ESS, SEE MIT THE RESET BUTTOM ESS, SES AND RETURN

PACE

(DODINST 7841.3)

S THIS A REQUEAR AMALYSIS (8). AS A SENSITURY AMALYSIS (1)? THER B OR 1

O VOU UISH PLOTS? 1-VES. 6-NO

DO YOU WISH TO ENTER THE DATA (8), OR DOES IT EXIST IN A FILE (1). ENTER 8 OR 1

PRIMARY (8) OR SECONDARY (1) ANALYSIS ENTER 8 OR 1

ENTER FY BOLLAR YEAR OF INPUT COSTS, AND FY BOLLAR VEAR OF OUTPUT COSTS - EG 78,79 B2.83 B2.83 ENTER COSTS IN THOUSANDS (K) OR MILLIONS (R) OF SENTER K OR M

ENTER STARTING (BASE) FY - EG 1979 1982

IF NO DATA FOR A PARTICULAR TYPE OF COST (EG MAINT). ENTER 0.0 (NO DECIMAL POINTS) WHEN NO. OF YEARS AND START YEAR ARE REQUESTED FOR THAT TYPE.

I MAXIMUM OF -45- VEARS FROM THE BASE YEAR IS ALLOUED.

ALL COSTS ENTERED MUST INCLUDE DECIMAL POINTS - AND IF HORE THAN ONE ARE ENTERED AT A TIME - THEY MUST BE SEPARATED BY COMMAS.

INTER NUMBER OF ALTERNATIVES - INCLUDING STATUS GUO! RAXIMUM OF S

THE FOLLOWING DATA REQUESTS WILL BE REPEATED FOR EACH ALTERNATIVE - STATUS QUO -MUST- BE ENTERED FIRST!

ENTER TITLE OF THIS ALTERNATIVE STATUS GUO - EXAMPLE ENTER NO. OF VEARS & START VEAR FOR HAINTENANCE - EG 10,1979 13,1882 BO YOU WISH TO ENTER THE COSTS FOR ALL VEARS (0) OR HANK THE PROGRAM GENERATE THER(1)? ENTER 0 OR 1

ENTER MAINTENANCE COSTS FOR EACH VEAR WHERE COSTS EXIST 112.18.371.4.403.18.454.01.507.7.585.0.614.9.642.3.766.2. 775.8.812.5.827.9.904.6 818. END OF PACE. IT YOU WANT A COPY PRESS THE COPY BUTTON RES. BEE MIT THE RESET BUTTON SEE, REE AND RETURN

16

MAUAL WEAPONS CENTER EJONORIC ANALYSIS MODEL - MAY 1981	(DODINST 7041.3)	_
ENTER NO. OF VERES & START VERE FOR OPERATIONS - EG 10,1879 13,1982		
DO YOU UISH TO ENTER THE COSTS FOR ALL YEARS (0) OR		
MANE THE PROGRAM GENERALE TMEN(1) - ENTER & OR 1		

PAGE :

ENTER FISCAL MEAR IN UNION COST OCCURS, COST CUITY DECIMAL POINT), NO. OF THE CURVE DESIRED, NO. OF THE CURVE BEGINS.

EG 1877.40. 18.1970

ENTER NO. OF VEARS & START VEAR

ENTER NO. OF VEARS & START VEAR

19.1988

DO YOU WISH TO ENTER THE COSTS FOR ALL YEARS (#) OR MANE THE PROGRAM GENERATE THER(1)? ENTER # OR 1

ENTER INFLATION DIFFERENTIAL FOR EACH OF THE COLLOWING - IN THE ORDER SPECIFIED:
SOLLOWING - IN THE ORDER SPECIFIED:
SOLLOWING - IN THE ORDER SPECIFIED:
STREET COSTS, TERMINAL UALUE. NO DECIMAL POINTS SUT THEY MUST BE SEPARATED BY COMMAS. -6- UALUES
SUST BE ENTERED - EG 3,3,-2,0,0,3

IF YOU WANT A COPY PRESS THE SEE MIT THE RESETURN

17

Technology Technology Technology and Marie Strates and Anti- Antonia, Marie Const.

ERR END OF PAGE IF YOU WANT A COPY PRESS THE COPY BUTTON ERR. RER MIT THE RESET BUTTON ERR, RER AND RETURN

PAGE :

1486866

secondary assessment many

IF YOU LANT A COPY PRESS THE BESTURN BRE MIT THE RESET BUTTON BRE, BRE AND RETURN THER OPERATIONS COSTS FOR EACH VEAR UMERE COSTS EXIST 12:18,164.37,196.55,228.7,260.9,293.1,325.3,357.4,895.6,421.8,454.0,486.2,518.3 195.6,421.8,454.0,486.2,518.3 197.6 NO. OF VEARS & START VEAR ENTER TITLE OF THIS ALTERNATIVE
ALTERNATIVE 1 - EXAMPLE
ENTER NO. OF VERS & START VEAR
13.1882
ENTER BUILDING INVESTMENT COSTS FOR EACH VEAR
UNERE COSTS ELIST
130.6281.8.483.1.584.3.545.756.8.888.1.1009.1.
1130.62.1851.8.1373.1.1494.4.1615.5
ENTER NO. OF VEARS & START VEAR
ENTER NO. OF VEARS & START VEAR VOU LISH TO ENTER THE COSTS FOR ALL YEARS (#) OR UE THE PROGRAM GENERALE THER(1)? ENTER # OR 1 13,1982 NO YOU WISH TO ENTER THE COSTS FOR ALL YEARS (#) OR HAVE THE PROGRAM GENERATE THEN(1)? ENTER # OR 1 If YOU WISH TO COMMECT ANY OF THE INPUTS FOR THIS ALTERNATUR - ENTER I FOR BUILD INVEST, F FOR FOUR MAINT, A FOR OPERS, B FOR THE VALUE, 7 FOR INFLAT DIF. IF NO COMMECTIONS OR COMMECTIONS COMPLETE, ENTER WITH PECHAL FORMIN WHICH COST OCCURS, COST WITH BECHAL POINT, NO. OF THE CURVE BEGINS.

(6. 1977, 40., 12, 1970

983,55.4,2,1982

WITH NO. OF VERS & START VEAR ENTER INFLATION DIFFERENTIAL FOR EACH OF THE FOLLOWING - IN THE ORDER SPECIFIED:
BUILD INVEST, ROUDE INVEST, ANTIVERNICE, OPEN DIRECT COSTS, TERRINAL UALUE, NO DECIMAL POI BUT THEY MUST BE ENFRED BY COMMAS. -6-U.
MUST BE ENTERED - EQ 3,3,-2,0,0,3 ENTER TERMINAL OR RESALE VALUE, IF ANY IS ENTERING A RESTORATION COST - DOLLAR PUST BE NEGATIVE. EG -3.2 TO YOU WISH A LISTING OF THE INPUTS OR THIS ALTERNATIVE? Y-VES, N-NO DO YOU AISH A LISTING OF THE INPUTS FOR THIS ALTERNATIVE? Y-VES, N-NO INTER NO. OF VEARS & START VEAR OF MAINTENANCE - EG 10,1979 3,1982 sss END OF PAGE COPY BUTTON SES.

MAUAL LEADONS CENTES SCONONIC ANALYSIS NOBEL - NAY 1981	center ic	OMONIC OMONIC	SATUNE	S NODE	) HA	: •		(DODINST 7041.3)	7 26 1.	ê		PAGE 1	<b>.</b>	
COSTS IN	OPTION & - ALTERNATIVE 1 - EXAMPLE COSTS IN FYSS KS	1106 1	- CXPM	ă										
FISCAL VEAR	1062	1983	<u>.</u>	100	1986	1987	1988	1 989	1990	1991	1992	1987 1988 1998 1998 1993 1993	1994	
IMMEST BUILD MAINTENANCE OPERATIONS BINECT COSTS TERM. UMLUE	325.3	201. 201. 164.7 4.4.4	<b>1</b> 448		4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	266.8 26.7 293.1	-0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	2000 2000 2000 2000 2000 2000 2000 200	22.00 380.00 6.40	251.04 4.07.7.0 4.0	13130-6 1361-8 1373-1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4	20 20 20 20 20 20 20 20 20 20 20 20 20 2	
SSE END OF PAGE COPY BUTTON SSE.	36 1F VO	U UANT	A COPY	PRESS	THE	IF YOU DANT A COPY PRESS THE BEE MIT THE RESET BUTTON REE, ERR AND RETURN	N W							

PAGE:

(DODINST 7041.3)

MAUAL LEAPONS CENTEP ECONOMIC ANALYSIS HOBEL - NAV 1981

Proposition | Notice of the

KAKKO DEFERENSI

ment etatons teniem economic martysis model - may 1981	CLATER LO	ONONIC	maly 819	1300E	<b>₩</b>	1881		(DODINST 7841.3)	7041.	â	•	PAGE 1	~
COSTS IN	OPTION 3 - ALTERNATIVE 2 - EXAMPLE COSTS IN FYSE KS	1106 2	- Exampl	ų									
FISCAL VEAR INVEST EQUIP VAINTENANCE DEBATIONS DIRECT CORTA	2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	1982 1983 198-0-221.2 198-0-221.2	* #7#4 * *****	2 77.0 2 7.0 2 7.0 2 7.0	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1986 1987 403.1 463.7 56.0 64.4 403.1 463.7	524 . 3 585 . 6 57 . 3 585 . 6 57 . 3 585 . 6 57 . 3 585 . 6 57 . 3 585 . 6 57 . 3 585 . 6 57 . 3 585 . 6 57 . 6 5		1996 645.3 98.1	1001 1001 1001 1001 1001 1001 1001 100	1898 1898 1898 1865	1993 140.0 100.0 100.0	~ 10
TERM. UNLUE 122 END OF PAGE COPY BUTTON EES.		THE THE	ST.7  IF YOU WANT A COPY PRESS THE SEE HIT THE RESET BUTTON REE, SEE AND RETURN	PRESS TO	##	AND RET	• • • • • • • • • • • • • • • • • • •		•	•	•	•	1

MANAL MEAPONS CENTER ECONOMIC ANALYSIS HODEL - MAY 1981

Property Secretary (Society Control Assessment (Society)

MEAPONS CENTER ECONOMIC ANALYSIS RODEL - NAV 1981 (DODINST 7041.3) PAGE! 9	DPTION 3 - ALTERNATIVE B - EXAMPLE COSTS IN FYER KS	AR 1962 1981 1984 1988 1987 1988 1989 1990 1991 1992 1993 AR	1333.0 160.6	F PACE IF VOU WANT A COPY PRESS THE ON 888. 888 HIT THE RESET BUTTOW 818, 888 HIT THE RESET BUTTOW 818, 888
MAUAL WENDONS CENTER	COSTS IN FVEE N	FISCAL VEAR 19	EBUIP NANCE 10HS COSTS	SEE END OF PAGE IN

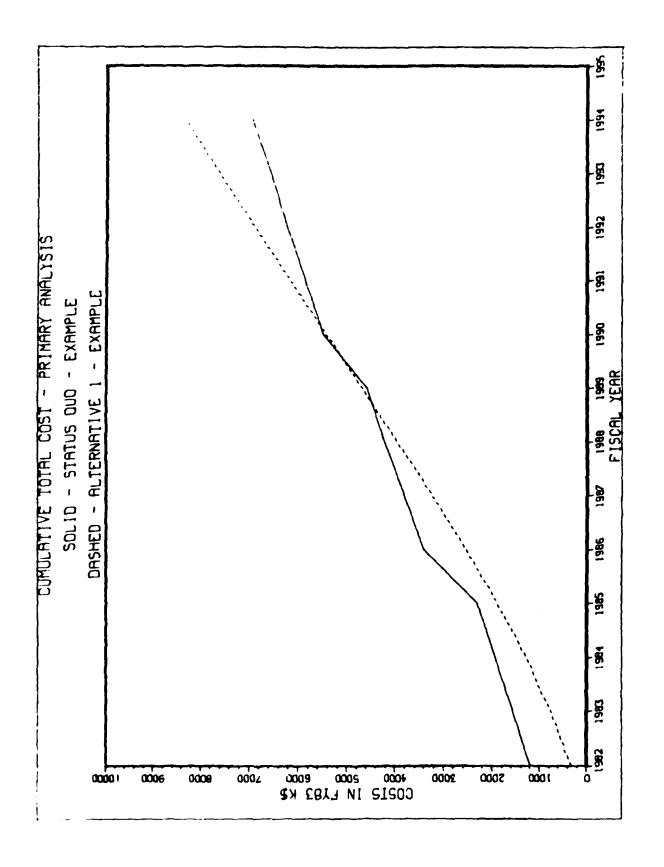
MAUAL DEAPONS CENTER ECONORIC ARALYSIS MODEL - MAY 1981	ENTER E	CONOMIC	PHALYSI	S 700€1	<b>X</b>	1961		(DODINST 7041.3	T 7041.	ê	Œ.	PAGE 1 1	•	
ANY MORE CHANGES? 1-YES, 8-NO	S7 1-V	IS, 8-1K	•											
OPTION 1 - STATUS GUO - EXAMPLE IMPUT COSTS IN FY83 KS	STATU	83 68 83 68	EXAMPLE											
FISCAL VEAR	1982	1983	1984	1985	1986	1987	88 65 1	8861	1996	1881	1992	1993	1994	TOTAL
MAINTENANCE OPERATIONS DIRECT COSTS	141.8 29.8 1074.2	308.5	438.5 39.5	487.8 45.8	544.8 52.2 1083.0	627.7 60.1	659.8 69.1	689 700.0	822.1 91.5 1096.6	832 165.3 6.6	871.8 121.1 0.0	887.4 139.3	9.7 160.2 1108.7	7464.9 1027.4 4356.5
TOTAL	1245.8	432.8	472.0		532.6 1680.0 687.8	687.8	728.9		2004.2	768.7 2004.2 937.7		1026.7	992.9 1026.7 1278.6 12788.8	12788.8
DISCOUNTED COSTS IN FV83	0 00515	IN FV83	•											
FISCAL YEAR	1982	1983	1984	1985	1986	1987	1988	1989	1990	1881	1992	1993	1994	TOTAL
naintenance Operations Direct costs	135.3 28.5 1024.6	345.6	341.0	349.1 32.5	354.9 34.0 705.5	371.8 35.6 6.0	355.2 37.2	337.3	365.8 40.7 485.3	336.7 42.6	320.6 44.5	296.7 46.6	2.9 48.7 337.6	3912.9 490.7 2552.4
PRESMT UALUE EQUIV. UNIFORM	1188.3 ANNUAL	375.3 COST	372 1 933.3	381.6	1094.5	4.7.4	392.5	376.3	891.8	379.3	365.1	343.2	388.6	6956.
RES END OF PACE IF YOU LANT A COPY PRESS THE COPY BUTTON SETURN	IF <	OU UANT	A COPY RESET B	PRESS 1	HE	AMD RET	URN	, .	•	. TERM		•		

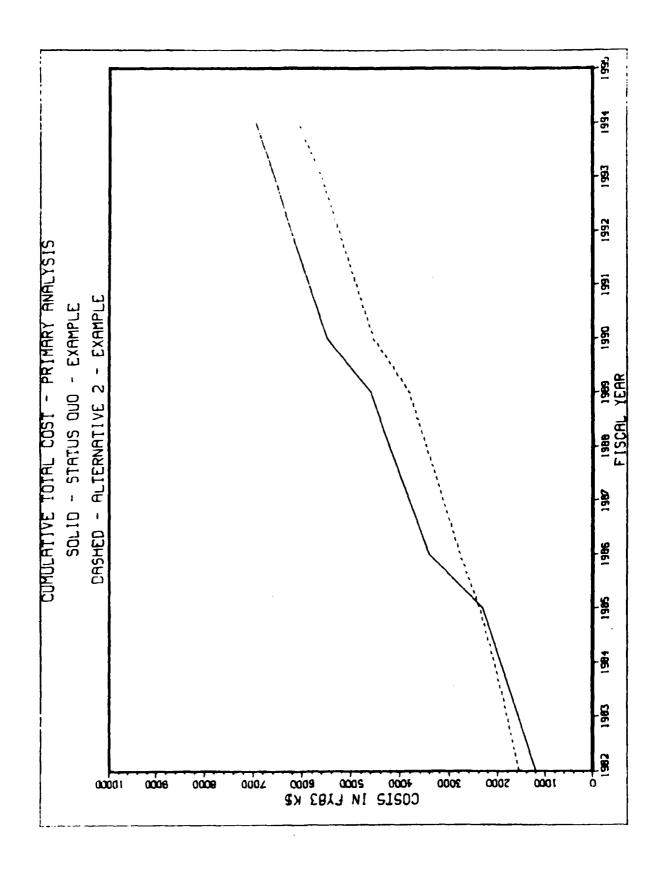
THEORY OF THE ECONOMIC MARIABLE STATES AND THE TRANSPORTED TO THE TRAN				ACOR.						<b>.</b>			•	
- . <b></b>		N FV83 K8		3	1080 1080 1080 1080 1000 1000	1087		9	90	1991	500	1001	9	ž
	172.3	300 80.4	434.5	2 20	28.3		2 CO.	20. 1	######################################	29.7	70.00	30.00	30.5	
	141.	176.4	a10.0	245.4	279.9		349.	363.5	9. W. T	452.6	487.1	521.7	556.1	
	341.4	506.3	341.4 506.3 671.2 836.0 1001.0 1165.9 1330.9 1495.4 1660.6 1825.5 1990.4 2155.4 2320.1 178	836.0	1001.0	1165.9	1330.9	1495.4	1660.6	1825.5	1990.4	2155.4	2320.1	-

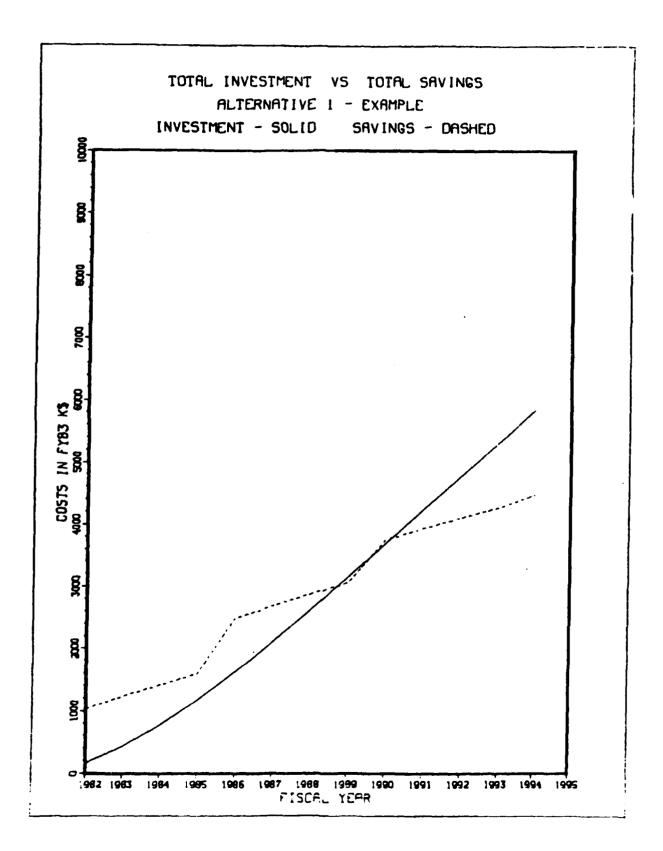
Š	į
•	?
2	֡
2	
į	
2000	;
į	
2	
i	ì
2	

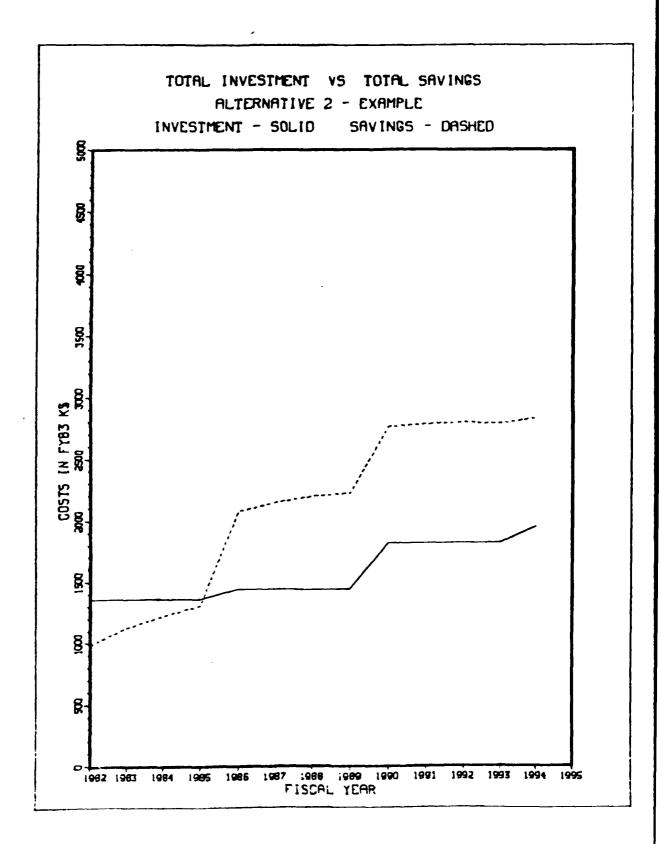
FISCAL YEAR	1982	1983	1984	1085	1986	1987	1988	888	1990	1991	1992	1993	1994	101
INCEST BUILD FAINTENANCE OPERATIONS TERR. UALUE	164.4 26.0 135.3	258.2 23.9 58.9	341.0	403.2 451.3 20.1 18.5 175.9 182.4	451.3 188.5 182.4	•	513.1 15.5 187.9	530.0 14.3 187.7	539.8 13.1 186.0	543.3 12.0 183.1	541.8 11.0 179.1	536.1 10.1 174.4	526.8 9.3 169.0	5846. 212. 2266.
PRESNT UALUE SAUINGS - PU	325.6	439.0	439.0 529.1 599.1 198.5 183.9 185.7	599.1	652.1 893.6	690.5 204.2	716.	731.9 7	738.9	738.4	732.0 175.0	720.6 158.7	705.1	8311
SIR . O. BREAKEVEN POINTINE BREAKEVEN	.8 47 - 19.48 POINT FOR	THE AL	BOUE PRO	CUREREN	T DID N E ERRON	OT EOUS								
EQUIO. UNIFORM DIFFER INFLAT SEE END OF PAC COPY BUTTON SI	TH ANNUAL COST - 1115.2 T RATES BUILD - 0, EQUIP - 0, MAINT - 0, OPERS - 0, DIRCT - 0, TERM UALUE - NGE IF YOU WANT A COPY PRESS THE FIRE. REE HIT THE RESET BUTTON REE, REE MAD RETURN	NUILD .	1115.2 • EGL • COPY • ESET B	PRESS 1	HE HAINT	AND RET	OPERS .	•	RCT .	6. TERM	UALUE	•		

MAUAL WEAPONS CENTER ECONOMIC ANALYSIS MODEL - MAY 1981	ENTER E	CONONIC	ANALYSI	S MODEL	- AA	1961		(BODINST 7841.3)	7 7041.	ê.	•	PAGE: 12	<b>~</b>	
OPTION 3 - ALTERNATIUE 2 - EXAMPLE IMPUT COSTS IN F/83 K8	- ALTER	MATIUE (	- EXAM	PLE										
FISCAL YEAR	15 82	1983	1984	1985	1986	1987	1988	1986	1880	1881	1992	1883	1991	10TAL
INCEST EQUIP AAINTENANCE OPERATIONS TERM. UALUE	1430.3 34.3 178.3	300.5	4.00 30.00 30.00	52.2 367.5	126.5 60.1 432.5	69.1 497.6	9.9 79.5 562.6	91.5 627.7	835.4 105.3 692.7	121.1	139.3	160.2 87.9	434 184.3 952.9	2887.1 1161.9 7314.0
TOTAL	1636.9	8 - 276 · 8	276.8 347.8 419.7 619.1 566.7 642.1 719.2 1633.4 878.8	418.7	619.1	266.7	642.1	719.2	1633.4	878.8	962.1	1048.2	1572.2	962.1 1048.2 1572.2 11261.2
DISCOUNTED COSTS IN FYB3 K&	0 00575	IN FV83	<b>\$</b>											
FISCAL YEAR	1982	1983	1984	1985	1986	1987	1988	1989	199	1991	1992	1993	1994	TOTAL
INVEST EQUIP RAINTENANCE OPERATIONS TERM. VALUE	1364.3 32.7 164.4	34.2	35.8	37.4	20.2 20.2 20.2 20.2	294.9	36.00 0.00 0.00 0.00	94.4 6.4.6 6.6.6	371.7 46.8 308.2	36.5 36.5	51.2 302.6	9.0 53.6 296.8	132.2 56.0 289.6	1950.6 564.5 3562.3
PRESNT VALUE SAVINGS - PU	1561.4 991.2	240.0	274.2	300.8		403.3 335.6 345.7 773.5 71.7 46.7	345.7	352. <b>0</b> 24.2	726.8 536.7	355.5	353.8	350.4	477.8	6058.6 2829.2
BREAKEUEN POINT - 4.83 EBUIU. UNIFORM ANNUAL COST - : DIFFER INFLATES BUILD - ( 888 END OF PAGE IF YOU LANT A COPY BUTTOM 888. 888 HIT THE R	ANNUAL ANNUAL PATES E IF	COST - BUILD - YOU WANT HIT THE	812.9 • EQU * COPY * RESET	PRESS 1	HE HER	. e.	OPERS .	. 01	ACT .	812.9 6. EQUIP - 9. MAINT - 6. OPERS - 6. DIRCT - 6. TERM UALUE - A COPY PRESS THE RESET BUTTOM 222, 222 AND RETURN	VALUE	•		









PAGE: 14

BO YOU WISH TO SAVE THIS DATA ON A FILE?

ENTER THE NAME OF THE FILE . THE FILE MATE. UST BE ALL LETTERS AND IT SESSUETESS END UITH A PERIOD . ENTER FILE MANE - UP TO & CHARACTERS INCLUDING PERIOD: EXAMP.
DO YOU DISH TO CHANGE ONE OF THE ALTERNATIVEST 1-VES, 0-NO

MINISTREM MINISTS Y-VES. N-NO N

END OF DISSPLA B.2 -- BE45 VECTORS GENERATED IN 4 PLOT FRAMES. -155CO- 4186 SORMENTO VALLEY DLUD., SAN DIEGO CALIF. 92121

DISSPLA IS A CONFIDENTIAL PROPRIETARY PRODUCT OF ISSCO AND ITS USE IS SUBJECT TO A NONDISSERINATION AND NONDISCLOSURE AGREERENT.

SET-36142.6 PT-17.6 10-0.8

APPENDIX B
SAMPLE RUN - SENSITIVITY ANALYSIS

(BOBINST 7841.3) MANAL LEAPONS CENTER ELONORIC ANALYSIS MODEL - MAY 1981

PACE

51/53/10

だっしょうしょう あいかいしかい かいしょうかん ないかん ないかんかいしょう

IN DERER TO QUITPUT TO CENTRAL SITE SUBMIT A TAPE.

WE RUN THE FOLLOWING BATCH JOB AFTER THIS PROGRAM IS FINISHED.

MUTPUT TO TERRINAL-0, OR CENTRAL-SITE-17

SEE THE BUSINGHISH MANUAL PAJE 10-10 FOR REFERENCE.

USER-CUSERCORE)/(PASSADARD) CHARGE-CONANGECORE) RESIDEL-PETAME 1) FETCH-"ROUNT PETAME SLOTXX-(TAPENAME) RING.; RIN SYSTEM-DURPALL RIN SYSTEM-DURPALL (1)EKMTP (PLOTFILE) (TAPENAME)/XXXX(TAPENAME)'); (1)END JOB

IF VOU WANT TO SEE THE PLOTS BEFORE PUTTING THEN ON THE CALCOMPLOTTER. ENTER THE FOLLOWING COMMAND FROM A TEXTROHIX TERRINAL

MUR SDISPOST/TEK300

LAKEN A PLOT IS DONE HIT THE RETURN BUTTON TO GET THE NEXT ONE

111 END OF PACE IF YOU WANT A COPY PRESS THE COPY BUTTON 111,111 AND RETURN

(DODINST 7841.3)

IS THIS A REGILAR ANALYSIS (0). BE A SCHOTTUTY ANALYSIS (1)? ENTER 0 OR 1

NOU UTSH PLOTST 1-YES. 0-10

DO VOU WISH TO ENTER THE DATA (8), OR DOES IT EXIST IN A FILE (1). ENTER 8 OR 1

ENTER THE MAME OF THE FILE . THE FILE NAME AN BE ALMA OR MUMERIC BUT IT SESSUSTEES EMD WITH A PERIOD .

THE FILE MANE ENTERED FOR INPUT HUSTS EXIST AND CONTAIN DATA!

EXAMPLE MANE - UP TO 12 CHARACTERS INCLUDING PERIOD. SECURIES FILE DOES NOT EXIST. DO VOU UISH TO ENTER THE BATA YOURSELF (1), OR TERMINATE (2)? ENTER 0, 1, OR 2

ENTER FILE MANE - UP TO 12 CHARACTERS INCLUDING PERIOD: EXAMP.

BY YOU MISH TO CHANCE THE FY BOLLAR YEAR
OF THE OUTPUT COSTS? PRESENTLY SET AT 83

1-YES, 0-NO

ESS EMB OF PACE IF YOU WANT A COPY PRESS THE COPY BUTTON SIS. SIS MIT THE RESET BUTTON SIS, SIS AND RETURN

MONAL MEANTONS CENTER ECONOMIC ANALYSIS MODEL - NAY 1981	CENTER EI	COMONIC	MALYSI	S MODEL	- 78A	1961		SNIGOG)	(DODINST 7841.3)	ê	•	28/53/80	Ž	PMGE 1 3
07710H 1 -	TS IN FY	s 900 -	STATUS QUO - EXAMPLE IN FVB3 KS											
FISCAL YEAR	15 82	1983	1582 1983 1984 1885 1986 1987 1988 1989 1990	1985	1986	1987	1988	1960	199	1991	1992	1993	1994	TOTAL
MAINTENANCE 141.8 398.5 432.5 487.2 544.8 627.7 658.8 OPERATIONS 29.8 34.3 39.5 45.4 52.2 60.1 69.1 DIRECT COSTS 1074.2 0.0 0.0 0.0 1083.0 0.0 0.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5	28.8 1074.2 07FILE A	398.5 34.3 5.0 EMOVED	432.5 39.5 6.6 78 b7758	45.4 45.4 0.0 0.0	544.8 52.2 1083.0	60.1	658.8	79.2	689.2 822.1 832.4 871.8 887.4 9.7 79.5 91.5 105.3 121.1 139.3 160.2 0.0 1090.6 0.0 1090.6 0.0 108.7	832.4 105.3	121.8	139.3	9.7 160.2 1198.7	7404.9 1027.4 4356.5
TOTAL	1245.8	432.8	245.8 432.8 472.0 532.6 1680.0	532.6	1680.0	8.789	124.9	768.7	2004.2	7.768	982.9	1026.7	1278.6	687.8 728.9 768.7 2004.2 937.7 992.9 1026.7 1278.6 12788.8
DISCOUNTED COSTS IN FY83 K&	D COSTS	IN FYB3	2											
FISCAL YEAR	1982	1983	1982 1983 1984 1985 1986 1987 1988 1989 1996 1891 1992 1993 1994	1985	1986	1967	1988	6861	9861	1881	7881	1993	1994	TOTAL
MAINTENANCE OPERATIONS DIRECT COSTS	135.3 28.5 4024.6	135.3 345.6 28.5 29.8 4024.6 0.0	341.0 349.1 354.9 31.1 32.5 34.0 0.0 0.0 705.5	348.1	354.9 34.0 765.5	371.8 35.6	371.8 355.2 337.3 365.8 336.7 35.6 37.2 38.9 40.7 42.6 0.0 0.0 465.3 0.0	337.3	365.8 46.7 485.3	336.7 •••	35.0 6.5 6.5	320.6 206.7 44.5 46.6 0.0	2.9 48.7	3912.9 496.7 2552.4
PRESHT VALUE EQUIV. UNIFORM	4188.3	375.3 505T	372.1	381.6	1094.5	4.4	395.5	376.3	891.8	378.3	366.1	343.2	388.6	6956.
DIFFER INFLAT RATES GUILD . 0, EQUIP . 0, RAINT . 0, OPERS . 0, DIRCT . 3, TERM UNLUE . 0	RATES IF VE	DUTED -	700 €	PRESS T	THE THE		· SABBO	•, 01	BCT .	e. TERM	30740	•		

TOTAL	12387.6 375.4 4537.1	17275.7
28	1733.4 30.5 556.1	2320.1
1991	30.2 30.2 521.7	2155.4
1992	1473.3 30.0 487.1	1996.4
1991	1343.2 20:7 452.6	1825.5
9887	1213.2 29.4 418.0	1660.6
6861	383.5 383.5	1495.4
1988	25.25 26.25 26.25	1330.9 1495.4
1987	31.5	1165.9
1986	592.7 24.3 279.9	100
1985	562.6 28.1 245.4	<b>836.</b>
1961	432.5 27.3 210.9	671.2
C96.1	382.4 27.5 176.4	566.3
1962	172.3 27.3 141.8	341.4
FISCAL VEAR	INVEST BUILD NAINTENANCE OPERATIONS TESM. VALUE	TOTAL

DISCOUNTED COSTS IN FY83 KS

TOTAL	5840.1 212.6 2266.2 7.4	8311.5 4477.1
1994	526.8 9.3 169.0	765.1 210.3
1993	536.1 10.1 174.4	720.6 158.7
1992	541.8 11.0 179.1	1732.0
1991	543.3 12.0 183.1	738.4 184.2
1990	539.8 13.1 186.0	738.9 692.7
1989	530.0 14.3 187.7	731.9
1988	513.1 15.5 187.9	716.5
1987	487.3 16.9 186.3	696.5 204.2
1986	451.3 18.5 182.4	662.1 893.6
5861	463.2 20.1 175.9	589.1
1984	341.0	529.1
1983	262.2 23.9 152.9	198.5
1982	26.4 26.0 135.3	325.6
FISCAL VEAR	INVEST BUILD RAINTENANCE OPERATIONS TERM. UALUE	PRESNT VALUE SAVINGS - PV

6, MAINT . 6, OPERS . 6, DIRCT . 6, TERM UALUE .

38

THE THE OWN WENTED TOWNS IN THE TREE			ere Lame		Ē				(College (Called)	9		70/53/90		
OFFICH 3 - ALTERNATIVE	- ALTER		2 - EXAMPLE	7										
FISCAL YEAR	1982	1983	1984	1985	1986	1987	1988	1989	199	1881	1992	1893	1994	TOTAL
INVEST EQUIP NAINTENANCE OPERATIONS TERM. UNLUE	1430.3 34.3 172.3	39.5	45.4	52.2 367.5	126.5 60.1 432.5	69.1 497.6	79.5 562.6	91.5	835.4 105.3 692.7	121.1	139.3 822.8	160.2 2887.9	434.9 184.3 952.9	2827.1 1181.9 7314.0
TOTAL	1636.9	276.8	347.8	419.7	619.1	566.7	642.1		719.2 1633.4	878.8		1048.2	1572.2	962.1 1048.2 1572.2 11261.2
DISCOUNTED COSTS IN FY83	(D COSTS	IN FY83	<b>.</b>								,			
FISCAL VEAR	1982	1983	1984	1985	1986	1987	1 988	1989	1996	1661	1992	1993	1994	TOTAL
INVEST EQUIP RAINTENANCE OPERATIONS TERR. UALUE	1364.3 32.7 164.4	2.46.	35.8 238.4	37.4	20.05 20.05 20.05 20.05	284.7	3.00 € 6.00 € 6.00	30.4.0	371.7 46.8 368.2	49.0 366.5	51.2 3 <b>0</b> 2.6	253.0 853.0 86.8	132.8 56.8 89.6	1950.6 564.5 3562.3 18.8
PRESHT UALUE SAUINGS - PU	1561.4	240.0	274.2	36.8 86.8 8.8	403.3 773.5	335.6	345.7	352.0 24.2	726.8 536.7	355.5	353.8 11.3	350.4	477.8	6058.6 2829.2
SIR 1.5 BREAKEVEN POINT . 4.83 EQUIU, INIFORM RANNAL COST DIFFER INFLAT RATES BUILD SIS END OF PAGE IF YOU WANT CORY BUTTON SIS. SIS MIT THE	5 4.83 14 4.83 1 MATES BU 16 IF YOU 18 88 HI	4.83 UNL COST - S BUILD - IF YOU WANT EES HIT THE	812.9 6, EQUIP - 6 A COPY PRESS T RESET BUTTON 8	F . I	e, Maint . e, OPERS . The ERE, ERE AND RETURN	AND RE	OPERS		DIRCT .	6, TERM VALUE -	I VALUE	•		

PAGE

NAME LEAPONS CENTER ECONOMIC ANALYSIS NOBEL - NAV 1981	ONIC PE	E YS	51	HOBEL - NAN	1881	<b>100</b>	151	(DODINST 7041.3)	66/23/82
	SEMS IT I	2	£	MLYSIS -	LEASE	SENSITIUITY ANALYSIS - LEASE US PROCURENENT			
LEASE FOR 1 VEARS (1962) STATUS GLO - EXAMPLE		Ş	-	MPV - 1188.3					
PROCLEGENT FOR 1 VEARS (1962) ALTERNATIVE 1 - EXAMPLE ALTERNATIVE 2 - EXAMPLE	(1962)	\$\$		NPU - 362.4 NPU - 1562.3					
LEASE FOR 4 VEARS (1985) STATUS GUO - EXAMPLE		3	•	MPU - 2317.4					
PROCLIEFERT FOR 4 YEARS (1985) ALTERNATIVE 1 - EXAMPLE ALTERNATIVE 2 - EXAMPLE	(1985)	33		HPU - 1875.4				,	
LEASE FOR 7 YEARS (1988) STATUS GUO - EXAMPLE		3	•	MPU - 4211.6					
PROCURERENT FOR 7 VEARS (1988) ALTERNATIVE 1 - EXAMPLE ALTERNATIVE 2 - EXAMPLE	(1988)	\$\$	• •	NPU - 3938.9 NPU - 3427.7					
LEASE FOR 10 YEARS (1991) STATUS GUO - EXAMPLE		\$	•	MPU - 5859.0					
PROCLIEERENT FOR 10 YEARS (1991) ALTERNATIUE 1 - EXAMPLE ALTERNATIUE 2 - EXAMPLE	(1991)	33	• •	MPU - 6151.5 MPU - 4878.3					

DREAKEVEN POINTS

(DOBINST 7841.3)

PMGE 1

M/23/12

OPTION 1 - STATUS GUO - EXAMPLE INPUT GUSTS IN FY83 KS

ACCOUNT ACCOUNTS LEGISLAND LEGISLAND ACCOUNT ACCOUNT

1019L	7404.9 1027.4 4356.5	2733. 3		TOTAL	3912.9 490.7 2552.4	6956. 3
1994	9.7 160.2 1108.7	992.9 1026.7 1278.5 12788.8		1994	2.9 48.7 337.0	388.6
1993	271. 8 887. 4 9.7 121.1 139.3 160.2 0.0 0.0 1108.7	1026.7		1993	320.6 296.7 44.5 46.6 0.0 0.0	343.2
1992		992.9		1992	320.6 44.5 0.0	1 375.3 372.1 381.6 1094.5 407.4 392.5 376.3 891.8 379.3 365.1 343 COST - 933.2 9UILD - 0, EQUIP - 0, MAINT - 0, OPERS - 0, DIRCT - 0, TERM. VALUE - 0
1991	632. 4 105. 3 0. 0	245.8 432.8 472.0 532.0 1680.0 687.8 728.9 768.7 2004.2 937.7		1661	336.7 42.6 0.0	379.3 0, TERM.
1990	689, 2   522, 1 79, 5   91, 5 0, 0 1090, 6	2004. 2		1990	365.8 40.7 485.3	891.8 RCI -
1989 1989	689.2 79.5 0.0	768.7		1989	337.3 38.9 0.0	376.3 0, DI
	659. d 69. i 0.0	728.9		1988	349.1 354.9 371.8 355.2 337.3 32.5 34.0 35.5 37.2 38.9 0.0 705.5 0.0 0.0 0.0 0.0	381.6 i094.5 407.4 392.3 376.3 IP - 0, MRINT - 0, OPERS - 0, DIS
1961	627.7 60.1 0.0	687.3		1967	371.8 35.5 3.0	407.4 .0,
1985 1986	487.2 544.8 45.4 52.2 0.0 1083.0	1680.0		1986	354.9 34.0 705.5	1.094.5 J. MRINT
	487.2 45.4 0.0	532.0		1985	349.1 32.5 0.0	391.6 IP - 0
1984	432.5 39.5 0.0	472.0	<u>5</u> .	1984	135.3 345.6 341.0 28.5 29.4 31.1 1024.5 0.0 0.0	372.1 933.3 0, EQUI
1983	398,5 54.3 3.0	<b>4</b> 32.∂	N FY83	1983	345.6 29.4 0.0	1188.3 375.3 NNURL COST - TES 9UILD -
1982	141.8 29.8 1074.2	1245. a	o casts r	1932	135.3 28.5 1024.5	VALUE 1188.3 375. UNITORY ANNUAL COST - INFLAT RATES BUILD
71509L 759R	MAINTENANCE OFFERTIONS DIRECT COSTS	:019L	DISCOUNTED COSTS IN FY83	FISCAL YEAR	MOINTENANCE OPERATIONS DIRECT COSTS	PRESNE VALUE 1188.3 EOJIV. UNIFORM ANNUAL DISPER IMPLAE RAFES

## OPTION 2 - ALTERNATIVE 1 - EXPAPLE INPUT COSTS IN FY83 KS

TOTAL	12387.6 375.4 4537.1	75.7
	1238 37 453	172
1994	1733.4 30.5 556.1	2320. 1
1993	1603.5 30.2 521.7	2155, 4
1992	30.0 30.0 487.1	1990. 4
1881	952.9 1082.8 1213.2 1343.2 1473.3 1603.5 1733.4 28.9 29.1 28.4 29.7 30.0 30.2 30.5 349.0 383.5 418.0 452.6 487.1 521.7 556.1	1825.5
1990	2313. 2 29. 4 418. 0	1 <b>660</b> . G
1989	29.1 393.5	1495.4
1958	952.9 ) 28.9 349.0	330, 9
1987	22.8 26.0 14.5	836.9 1031.9 1165.9 1330.9 1495.4 1660.6 1825.5 1990.4 2155.4 2320.1 17275.
1985	692,7 8 28.3 279.9 3	0.7031
1985	28.1 29.1 245.4	836.0
1984	432.5 27.8 210.9 24.4	671.2 (S
1983	302.4 27.5 176.4	506.3 671.2 4 FY83 KS
1982	172.3 27.3 141.8	341,4 506,3 67 COSTS IN FY83 KS
YEAR	NUTCO NUCE NUS NUCE NUCE NUCE NUCE NUCE NUCE NUCE NUCE	COUNTED
FISCOL Y	INVEST BUILD MAINTENANCE OPERATIONS ITEM: VALUE	tara. Dist

738.4 732.0 720.6 705.1 210.3 9.3 9.3 169.0 1994 175.0 158.7 536. i 10. i 174. 4 541.8 11.0 179.1 184.2 543.3 12.3 183.1 1991 652.1 690.5 716.5 731.9 738.9 174.3 692.7 1990 539. d 13. i 146. 3 530.3 14.3 187.7 1989 189.0 513. i 15. S 187. 9 1989 204.2 16.9 186.3 1961 893. G 451.3 18.5 182.4 165.7 203. 2 20. 1 175. 9 599. 1 1995 163.9 341.0 21.9 166.2 7.4 529.1 1994 325.6 439.0 5.861 0.7501 262. 2 23. 9 152. 9 1983 164.4 26.0 135.3 TNVEST EUTLD MAINTENANDE SPERATIONS TERM, VALUE Ad - SONIAGS BULLY YALUE FISTAL YEAR

SIR - 0.8
PRESYEVEN POINT - 19.48
THE PROCURCHENT DID NOT
OCOUR WITHIN THE AWAYLSIS PERIOD. -BE- MAY BE ERRONEOUS!!
COUTY, UNIFORM RAWGHL COST - 111S.2
DIFFER INFLAT RATES BUILD - 0, EQUIP - 0, MAINT - 0,

0, DIRCT - 0, TERM. VALUE - 0, OPERS -

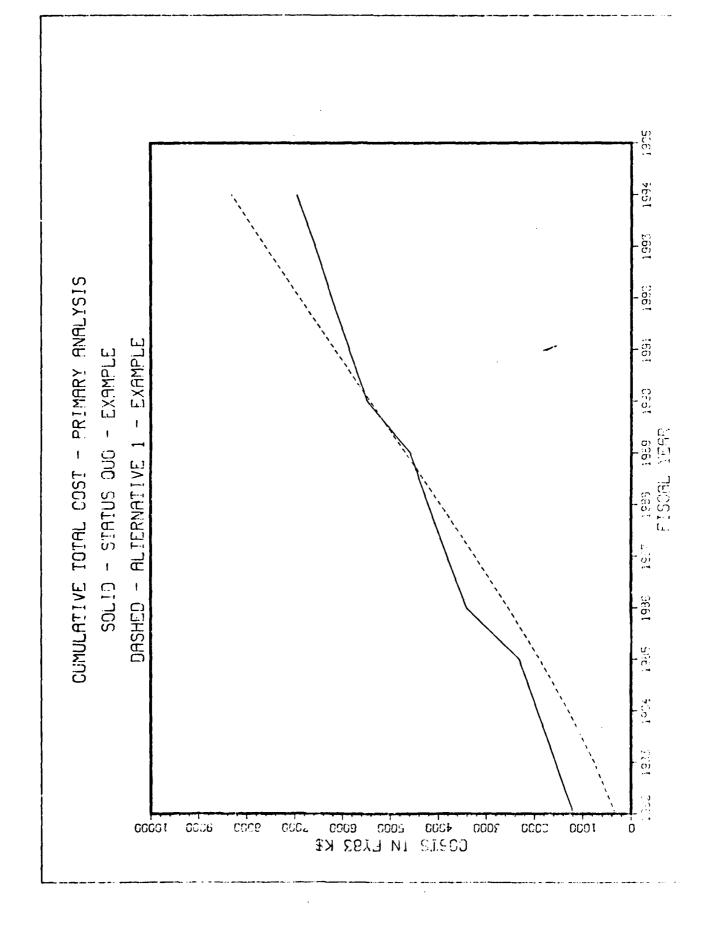
OPTION 3 - ALTERNATIVE 2 - EXAMPLE INPUT COSTS IN 1783 KS

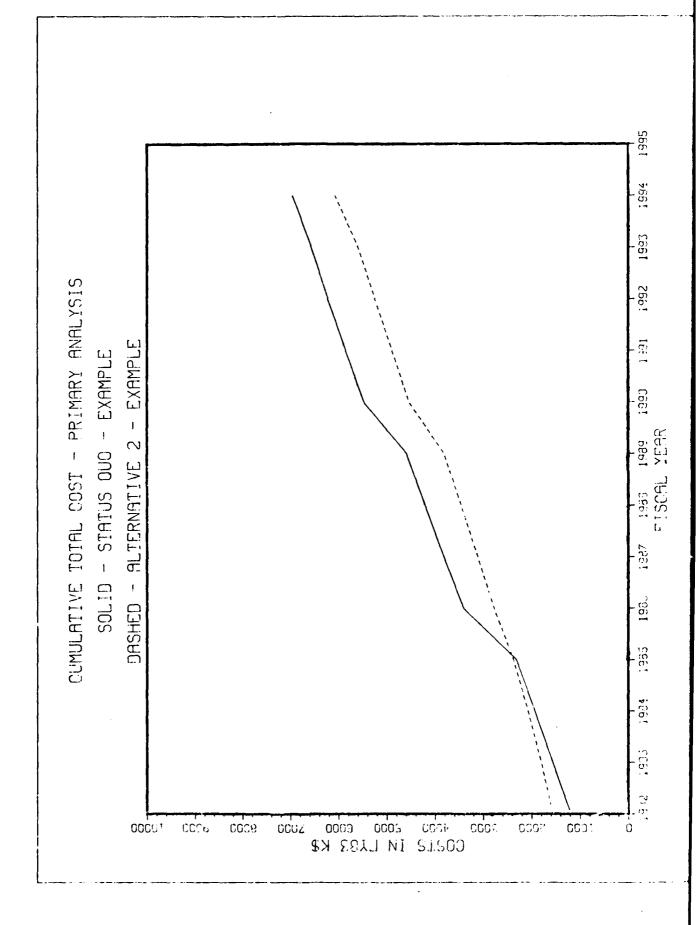
ADDITION CHARACTER TRANSPORT AND AND SELECTION

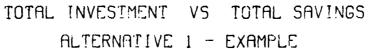
107AL	2627.1 1181.9 7314.0	719.2 1633.4 878.8 962.i 1046.2 1572.2 11261.2	
1994	434.9 184.3 952.9	1572.2	
1993	0.0 160.2 887.9	1046.2	
1992	0.0 0.0 4 139.3 160.2 1 822.8 887.9 9	962. i	
1991	0.0 121.1 757.8	å76. ð	
1993	835.4 105.3 692.7	1533. 4	
1989	0.0 91.5 627.7	719.2	
1958	0.0 79.5 552.6	642.1	
1.981	0.0 69.1 497.6	3 566.7	
1985	126.5 60.1 432.5	619	
1965	52.2 367.5	419.	
1.994	0.0 45.4 302.4 61.9	1636.9 276.8 347.8	85 50
1983	39.5 237.3	276. 8	N FY83
1995	1450.3 34.3 172.3	1636.9	DISCOUNTED COSTS IN FY83 KS
akar uposia	*WEST EQUIP MAINTENANCE OPERATIONS IERM, VALUE	:019iL	TNUCYSIC

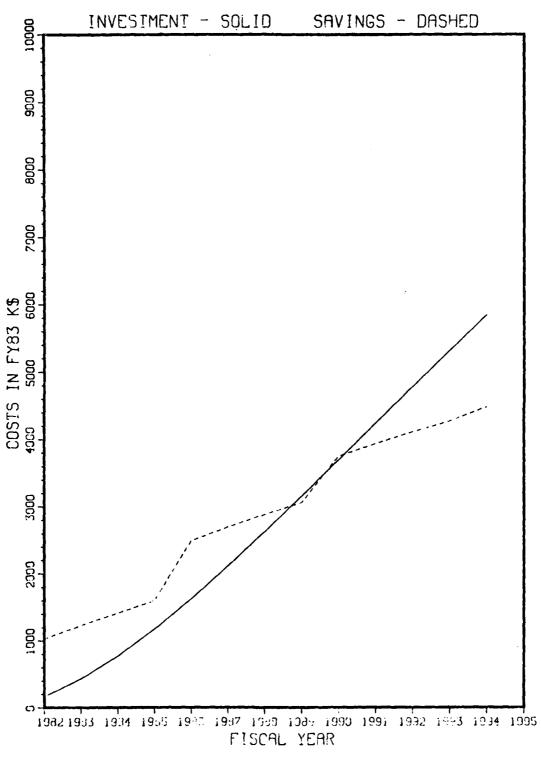
1950, 6 564, 5 3562, 3 29087 477.8 6058.6 107% 43.0 132.2 55.0 289.6 1994 350.4 1393 0.3 53.6 296.8 -7.2 353.8 11.3 1992 0.9 51.2 302.6 23.8 355.5 1661 0.0 49.0 306.5 726.8 536.7 371.7 46.8 308.2 1989 1990 24.2 9.0 44.8 307.2 352.0 3.5.8 332.9 345.7 ₹6.7 1969 335.6 1997 0.0 40.9 284.7 71.7 1561.4 240.0 274.2 300.8 403.3 773.5 82.4 35.2 281.8 1996 <del>.3</del>0. a 0.0 37.4 263.4 1985 97.9 233.4 18.8 1984 34.2 205.8 991.2 135.3 1983 1364. 3 32. 7 164. 4 1982 INVEST EQUIP MAINTENANCE OPERATIONS FERM, VALUE BULL VALUE Ad - SENTABS FISCAL YEAR

812.9 3, EQUIP - 3, MAINT - 3, DPERS - 0, DIRCT - 3, TERM. VALUE -SIR - 1.5 PRESMEVEN POINT - 4.83 SOULY, UNIFORM RANKHL COST -DIFFER INFLAT RATES BUILD -

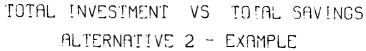


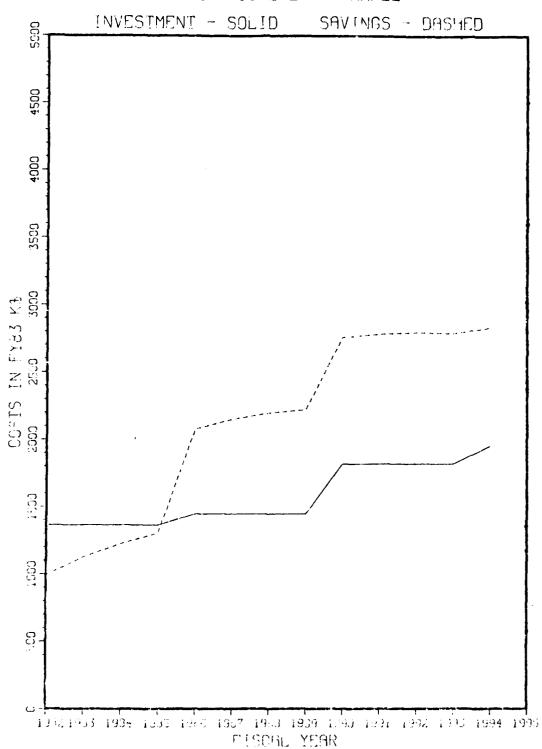






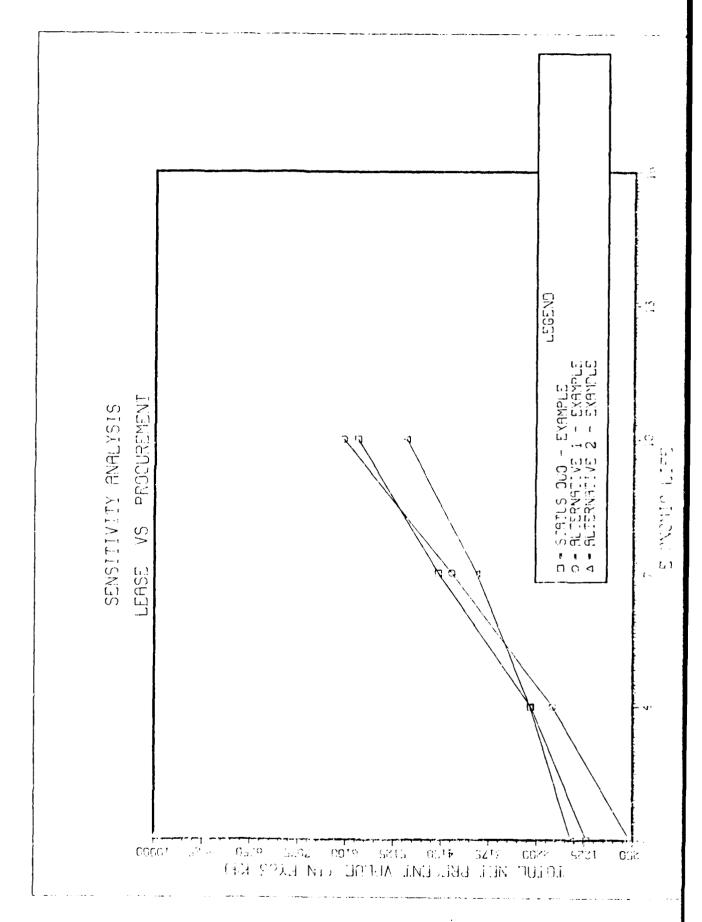
・ことのできることのできない。





# SENSITIVITY ANALYSIS - LEASE VS PROCUREMENT

					OCCUR WITHIN THE ANALYSIS PERIODBE- MAY BE ERRONEOUS!
NPV - 1188.3 NPV - 302.4 NPV - 1502.5 NPV - 2317.4 NPV - 1875.4 NPV - 2332.0	NPV - 4211.6	NPV - 3938.9 NPV - 3427.7	C.883- AN	NPV - 5151.5 NPV - 4070.3	9E - 19.48 E PRODUREMENT DID NOT E2 - 4.83
LENSE FOR 1 YEARS (1982) STATUS DUD - EXAMPLE REGULEHENT FOR 1 YEARS (1982) ALTERNATIVE 1 - EXAMPLE ALTERNATIVE 2 - EKAMPLE NATION - EKAMPLE NATION DUD - EKAMPLE REGULEMENT FOR 4 YEARS (1985) ALTERNATIVE 1 - EKAMPLE NATION OF EKAMPLE NATION OF EKAMPLE NATIVE 2 - EKAMPLE NATION OF EKAMPLE	LEGITE FOR 7 YEARS (1948)	PODURENSNI FOR 7 YERRS (1908) ALIGNATIVE 1 - EKRYPLE N ALIGNATIVE 2 - EXONPLE N	LETSS FOR 10 YEARS (1991) STATUS DUD - EXAMPLE	PROCURTING TOR 10 YEARS (1991) ALTICKNITUE 1 - EXPARLE N ALTERNATIVE 2 - EKRAPLE N	BREAKEVEN POINTS  STATUS DUD - EKAMPLE VS  ALTENATIVE 1 - EKAMPLE  THE BREAKEVEN POINT FOR THE REOVE PROGUREMENT DID NOT  ALTENATIVE 2 - EXAMPLE  EL - 4.83



### INITIAL DISTRIBUTION

### Copies

30 NPPS

12 DTIC

### CENTER DISTRIBUTION

Copies	Code	Name
2	1808	D. Wildy
1	182	A. Camara
1	1828	M. Gray
1	1828	J. Garner
30	1828	S. Becker
1	522.1	Library (C)
1	522.2	Library (A)

### **DTNSRDC ISSUES THREE TYPES OF REPORTS**

- 1. DTNSRDC REPORTS, A FORMAL SERIES, CONTAIN INFORMATION OF PERMANENT TECHNICAL VALUE. THEY CARRY A CONSECUTIVE NUMERICAL IDENTIFICATION REGARDLESS OF THEIR CLASSIFICATION OR THE ORIGINATING DEPARTMENT.
- 2. DEPARTMENTAL REPORTS, A SEMIFORMAL SERIES, CONTAIN INFORMATION OF A PRELIMINARY, TEMPORARY, OR PROPRIETARY NATURE OR OF LIMITED INTEREST OR SIGNIFICANCE. THEY CARRY A DEPARTMENTAL ALPHANUMERICAL IDENTIFICATION.
- 3. TECHNICAL MEMORANDA, AN INFORMAL SERIES, CONTAIN TECHNICAL DOCUMENTATION OF LIMITED USE AND INTEREST. THEY ARE PRIMARILY WORKING PAPERS INTENDED FOR INTERNAL USE. THEY CARRY AN IDENTIFYING NUMBER WHICH INDICATES THEIR TYPE AND THE NUMERICAL CODE OF THE ORIGINATING DEPARTMENT. ANY DISTRIBUTION OUTSIDE DTNSRDC MUST BE APPROVED BY THE HEAD OF THE ORIGINATING DEPARTMENT ON A CASE-BY-CASE BASIS.

### END

FILMED

1-84

DTIC